

REMARKS

In the non-final Office Action, the Examiner rejects claims 16-19, 21, 23, 24, 27, 28, 31-35, 37, and 38 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,663,949 (Ishibashi) in view of U.S. Patent No. 7,187,649 (Mazzurco), U.S. Patent No. 4,551,836 (Parikh) U.S. Patent No. 6,031,838 (Okabe), and U.S. Patent No. 6,973,029 (Jantzen); rejects claims 22 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Ishibashi in view of Mazzurco, Parikh, Okabe, and Jantzen and further in view of U.S. Patent No. 7,197,052 (Crocker); and rejects claims 20, 29, and 36 under 35 U.S.C. § 103(a) as being unpatentable over Ishibashi in view of Mazzurco, Parikh, Okabe, and Jantzen and further in view of U.S. Patent No. 6,778,536 (Ofek). The rejections are respectfully traversed.¹

By this Amendment, Applicant amends claims 16-18, 27, 34, and 38 to improve form. No new matter has been introduced. Claims 16-24 and 27-38 remain pending.

Rejection under 35 U.S.C. § 103 Based on Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen

Claims 16-19, 21, 23, 24, 27, 28, 31-35, 37, and 38 stand rejected under 35 U.S.C. § 103(a) based on Ishibashi in view of Mazzurco, Parikh, Okabe, and Jantzen. The rejection is traversed.

Independent claim 16, as amended, recites an interface module usable in a system for forwarding packets, comprising, among other things, duplicator logic to duplicate data packets

¹ As Applicant's remarks with respect to the Examiner's rejections overcome the rejections, Applicant's silence as to certain assertions by the Examiner in the Office Action or certain requirements that may be applicable to such rejections (e.g., whether a reference constitutes prior art, motivation to combine references, assertions as to dependent claims, etc.) is not a concession by Applicant that such assertions are accurate or that such requirements have been met, and Applicant reserves the right to dispute these assertions/requirements in the future.

contained in a received incoming stream and transmit the duplicate data packets to the selected two forwarding planes for processing, wherein identical state information is maintained in the selected two forwarding planes based upon state information obtained from the transmitted data packets; and despray logic to form an outgoing stream of data packets from the processed data packets forwarded from one of the selected two forwarding planes based on a signal from the switchover unit.

This combination of features is not disclosed or suggested by Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen, whether taken alone, or in any reasonable combination. The Examiner alleges that Ishibashi discloses “a transfer unit configured to transmit the data packets contained in the received incoming stream to each of two forwarding planes,” and points to Fig. 27 (ATM switch modules 2) and col. 2, lines 11-16 for support (Office Action – page 4). Applicant disagrees with the Examiner's interpretation of Ishibashi.

Fig. 27 depicts an ATM switch 1 formed of duplexed ATM switch modules 2 for exchanging ATM cells, a duplexed fiber interface shelf 3 having duplexed fiber interface common cards 4 for controlling network highways connected to other switches and duplexed fiber interface cards (interface section) 5, duplexed subscriber line controllers 6 for controlling subscriber lines, duplexed network control signal processors 7, and an operation system 8. Further, the duplexed fiber interface common cards 4 have interfaces with the ATM switch modules 2. Nowhere in this section, or elsewhere, does Ishibashi disclose or suggest that ATM switch modules 2—which the Examiner alleges also corresponds to forwarding planes (Office Action – page 3)—include duplicator logic to duplicate data packets contained in a received incoming stream and transmit the duplicate data packets to the selected two forwarding planes

for processing, wherein identical state information is maintained in the selected two forwarding planes based upon state information obtained from the transmitted data packets; and despray logic to form an outgoing stream of data packets from the processed data packets forwarded from one of the selected two forwarding planes based on a signal from the switchover unit, as recited in amended claim 16.

Col. 2, lines 11-16 of Ishibashi discloses:

In this example, the system can continually keep the operation of the duplicated fiber interface common cards 4 of both the ACT and STB groups in common, by performing same operation without distinguishing the ACT or STB group in the fiber interface common cards of the both duplexed groups.

This section of Ishibashi discloses a system that can continually keep the operation of the duplicated fiber interface common cards 4 of both the active (ACT) and standby (STB) groups in common, by performing same operation without distinguishing the ACT or STB group in the fiber interface common cards 4 of the two duplexed groups. Nowhere in this section, or elsewhere, does Ishibashi disclose or suggest duplicator logic to duplicate data packets contained in a received incoming stream and transmit the duplicate data packets to the selected two forwarding planes for processing, wherein identical state information is maintained in the selected two forwarding planes based upon state information obtained from the transmitted data packets; and despray logic to form an outgoing stream of data packets from the processed data packets forwarded from one of the selected two forwarding planes based on a signal from the switchover unit, as recited in amended claim 16.

Mazzurco, Parikh, Okabe, and Jantzen also fail to disclose or suggest these features.

Mazzurco, for example, discloses a linear 1:n automatic protection switching protection scheme, in which switching matrix 16 of node A provides two information lines 32 to output

interface 18, and selector 28 receives the two information lines and broadcasts the information over protection channel 26 and a plurality of working channels 24a and 24b to transfer the information. Selector 28 may also broadcast the information over protection channel 26 upon detecting a failure in any of working channels 24. At input interface 20 of node B, selector 30 receives protection channel 26 and the plurality of working channels 24a and 24b. Selector 30 determines a signal quality of each of the plurality of working channels 24a and 24b. If a working channel fails, selector 30 signals 28 to place the failed channel on protection channel 26. Selector 30 selects the data of the failed channel from protection channel 26 and the plurality of the unfailed working channels, either 24a or 24b, onto information lines 34 for transport to switching matrix 22 (col. 2, line 66 – col. 3, line 17 and Fig. 2). Nowhere in this section, or elsewhere, does Mazzurco disclose or suggest duplicator logic to duplicate data packets contained in a received incoming stream and transmit the duplicate data packets to the selected two forwarding planes for processing, wherein identical state information is maintained in the selected two forwarding planes based upon state information obtained from the transmitted data packets; and despray logic to form an outgoing stream of data packets from the processed data packets forwarded from one of the selected two forwarding planes based on a signal from the switchover unit, as recited in amended claim 16.

For at least the foregoing reasons, claim 16 is patentable over Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen, whether taken alone, or in any reasonable combination.

Claim 17 depends from claim 16 and is, therefore, patentable over Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen, whether taken alone, or in any reasonable combination, for at least the reasons given for claim 16.

Independent claim 18, as amended, recites a system for forwarding packets, comprising, among other things, a first interface module coupled to first and second forwarding planes and including first logic to duplicate packets contained in an incoming stream at an ingress port and transmit the packets to the first and second forwarding planes for processing, and second logic to form an outgoing stream of packets from the processed packets forwarded from one of the first or second forwarding planes based on a signal from the controller for transmitting at an egress port.

This combination of features is not disclosed or suggested by Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen, whether taken alone, or in any reasonable combination. The Examiner alleges that Ishibashi discloses “a transfer unit configured to transmit the data packets contained in the received incoming stream to each of two forwarding planes,” and points to Fig. 27 (ATM switch modules 2) and col. 2, lines 11-16 for support (Office Action – page 4). Applicant disagrees with the Examiner’s interpretation of Ishibashi.

Fig. 27 depicts an ATM switch 1 formed of duplexed ATM switch modules 2 for exchanging ATM cells, a duplexed fiber interface shelf 3 having duplexed fiber interface common cards 4 for controlling network highways connected to other switches and duplexed fiber interface cards (interface section) 5, duplexed subscriber line controllers 6 for controlling subscriber lines, duplexed network control signal processors 7, and an operation system 8. Further, the duplexed fiber interface common cards 4 have interfaces with the ATM switch modules 2. Nowhere in this section, or elsewhere, does Ishibashi disclose or suggest that ATM switch modules 2—which the Examiner alleges also corresponds to forwarding planes (Office Action – page 3)—include first logic to duplicate packets contained in an incoming stream at an

ingress port and transmit the packets to the first and second forwarding planes for processing, and second logic to form an outgoing stream of packets from the processed packets forwarded from one of the first or second forwarding planes based on a signal from the controller for transmitting at an egress port, as recited in amended claim 18.

Col. 2, lines 11-16 of Ishibashi is reproduced above. This section of Ishibashi discloses a system that can continually keep the operation of the duplicated fiber interface common cards 4 of both the active (ACT) and standby (STB) groups in common, by performing same operation without distinguishing the ACT or STB group in the fiber interface common cards 4 of the both duplexed groups. Nowhere in this section, or elsewhere, does Ishibashi disclose or suggest a first interface module coupled to first and second forwarding planes and including first logic to duplicate packets contained in an incoming stream at an ingress port and transmit the packets to the first and second forwarding planes for processing, and second logic to form an outgoing stream of packets from the processed packets forwarded from one of the first or second forwarding planes based on a signal from the controller for transmitting at an egress port, as recited in amended claim 18.

Mazzurco, Parikh, Okabe, and Jantzen also fail to disclose or suggest this feature.

Mazzurco, for example, discloses a linear 1:n automatic protection switching protection scheme, in which switching matrix 16 of node A provides two information lines 32 to output interface 18, and selector 28 receives the two information lines and broadcasts the information over protection channel 26 and a plurality of working channels 24a and 24b to transfer the information. Selector 28 may also broadcast the information over protection channel 26 upon detecting a failure in any of working channels 24. At input interface 20 of node B, selector 30

receives protection channel 26 and the plurality of working channels 24a and 24b. Selector 30 determines a signal quality of each of the plurality of working channels 24a and 24b. If a working channel fails, selector 30 signals 28 to place the failed channel on protection channel 26. Selector 30 selects the data of the failed channel from protection channel 26 and the plurality of the unfailed working channels, either 24a or 24b, onto information lines 34 for transport to switching matrix 22 (col. 2, line 66 – col. 3, line 17 and Fig. 2). Nowhere in this section, or elsewhere, does Mazzurco disclose or suggest a first interface module coupled to first and second forwarding planes and including first logic to duplicate packets contained in an incoming stream at an ingress port and transmit the packets to the first and second forwarding planes for processing, and second logic to form an outgoing stream of packets from the processed packets forwarded from one of the first or second forwarding planes based on a signal from the controller for transmitting at an egress port, as recited in amended claim 18.

For at least the foregoing reasons, claim 18 is patentable over Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen, whether taken alone, or in any reasonable combination.

Claims 19, 21, 23, and 24 depend from claim 18 and are, therefore, patentable over Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen, whether taken alone, or in any reasonable combination, for at least the reasons given for claim 18.

Independent claim 27, as amended, recites features similar to, yet possibly of different scope than, features recited in claim 18. Claim 27 is therefore, patentable over Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen, whether taken alone, or in any reasonable combination, for at least reasons similar to the reasons given for claim 18.

Claims 28 and 31-33 depend from claim 27 and are, therefore, patentable over Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen, whether taken alone, or in any reasonable combination, for at least the reasons given for claim 27.

Independent claim 34, as amended, recites a network device including a group of three or more packet forwarding engines (PFEs) configured to receive packets from and transmit packets to at least one of a plurality of interface modules coupled to the group of PFEs. The method comprises: selecting a first PFE and a second PFE of the group of PFEs; receiving, by the at least one interface module, at least one packet contained in an incoming stream at an ingress port of the network device; duplicating the at least one packet; transmitting, from the at least one interface module, the duplicate packet to the first PFE and the second PFE for processing; maintaining, in the first and second PFEs, identical state information associated with the processed packet; receiving, at the at least one interface module, the processed packets forwarded from each of the first and second PFEs; and transmitting, by the at least one interface module, selected ones of the forwarded packets from one of the first PFE or the second PFE at an egress port of the network device.

This combination of features is not disclosed or suggested by Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen, whether taken alone, or in any reasonable combination. For example, Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen, do not disclose or suggest duplicating the at least one packet; transmitting, from the at least one interface module, the duplicate packet to the first PFE and the second PFE for processing; receiving, at the at least one interface module, the processed packets forwarded from each of the first and second PFEs; and transmitting, by the at least one interface module, selected ones of the forwarded packets from

one of the first PFE or the second PFE at an egress port of the network device. The Examiner alleges that Ishibashi discloses "a transfer unit configured to transmit the data packets contained in the received incoming stream to each of two forwarding planes," and points to Fig. 27 (ATM switch modules 2) and col. 2, lines 11-16 for support (Office Action – page 4). Applicant disagrees with the Examiner's interpretation of Ishibashi.

Fig. 27 depicts an ATM switch 1 formed of duplexed ATM switch modules 2 for exchanging ATM cells, a duplexed fiber interface shelf 3 having duplexed fiber interface common cards 4 for controlling network highways connected to other switches and duplexed fiber interface cards (interface section) 5, duplexed subscriber line controllers 6 for controlling subscriber lines, duplexed network control signal processors 7, and an operation system 8. Further, the duplexed fiber interface common cards 4 have interfaces with the ATM switch modules 2. Nowhere in this section, or elsewhere, does Ishibashi disclose or suggest duplicating the at least one packet; transmitting, from the at least one interface module, the duplicate packet to the first PFE and the second PFE for processing; receiving, at the at least one interface module, the processed packets forwarded from each of the first and second PFEs; and transmitting, by the at least one interface module, selected ones of the forwarded packets from one of the first PFE or the second PFE at an egress port of the network device, as recited in amended claim 34.

Col. 2, lines 11-16 of Ishibashi is reproduced above. This section of Ishibashi discloses a system that can continually keep the operation of the duplicated fiber interface common cards 4 of both the active (ACT) and standby (STB) groups in common, by performing same operation without distinguishing the ACT or STB group in the fiber interface common cards 4

of the both duplexed groups. Nowhere in this section, or elsewhere, does Ishibashi disclose or suggest duplicating the at least one packet; transmitting, from the at least one interface module, the duplicate packet to the first PFE and the second PFE for processing; receiving, at the at least one interface module, the processed packets forwarded from each of the first and second PFEs; and transmitting, by the at least one interface module, selected ones of the forwarded packets from one of the first PFE or the second PFE at an egress port of the network device, as recited in amended claim 34.

Mazzurco, Parikh, Okabe, and Jantzen also fail to disclose or suggest this feature.

Mazzurco, for example, discloses a linear 1:n automatic protection switching protection scheme, in which switching matrix 16 of node A provides two information lines 32 to output interface 18, and selector 28 receives the two information lines and broadcasts the information over protection channel 26 and a plurality of working channels 24a and 24b to transfer the information. Selector 28 may also broadcast the information over protection channel 26 upon detecting a failure in any of working channels 24. At input interface 20 of node B, selector 30 receives protection channel 26 and the plurality of working channels 24a and 24b. Selector 30 determines a signal quality of each of the plurality of working channels 24a and 24b. If a working channel fails, selector 30 signals 28 to place the failed channel on protection channel 26. Selector 30 selects the data of the failed channel from protection channel 26 and the plurality of the unfailed working channels, either 24a or 24b, onto information lines 34 for transport to switching matrix 22 (col. 2, line 66 – col. 3, line 17 and Fig. 2). Nowhere in this section, or elsewhere, does Mazzurco disclose or suggest duplicating the at least one packet; transmitting, from the at least one interface module, the duplicate packet to the first PFE and the second PFE

for processing; receiving, at the at least one interface module, the processed packets forwarded from each of the first and second PFEs; and transmitting, by the at least one interface module, selected ones of the forwarded packets from one of the first PFE or the second PFE at an egress port of the network device, as recited in amended claim 34.

For at least the foregoing reasons, claim 34 is patentable over Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen, whether taken alone, or in any reasonable combination.

Claims 35 and 37 depend from claim 34 and are, therefore, patentable over Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen, whether taken alone, or in any reasonable combination, for at least the reasons given for claim 34.

Independent claim 38, as amended, recites features similar to, yet possibly of different scope than, features recited in claim 34. Claim 38 is therefore, patentable over Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen, whether taken alone, or in any reasonable combination, for at least reasons similar to the reasons given for claim 34.

*Rejection under 35 U.S.C. § 103 Based on Ishibashi,
Mazzurco, Parikh, Okabe, Jantzen, and Crocker*

Claims 22 and 30 stand rejected under 35 U.S.C. § 103(a) based on Ishibashi in view of Mazzurco, Parikh, Okabe, Jantzen, and Crocker. The rejection is traversed.

Claims 22 and 30 depend from claim 18 and 27, respectively. Without acquiescing in the rejection, Crocker does not cure the deficiencies in the disclosures of Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen discussed above with respect to claim 18 and 27. Claims 22 and 30 are, therefore, patentable over Ishibashi, Mazzurco, Parikh, Okabe, Jantzen, and Crocker,

whether taken alone, or in any reasonable combination, for at least the reasons given above for claims 18 and 27.

*Rejection under 35 U.S.C. § 103 Based on Ishibashi,
Mazzurco, Parikh, Okabe, Jantzen, and Ofek*

Claims 20, 29, and 36 stand rejected under 35 U.S.C. § 103(a) based on Ishibashi in view of Mazzurco, Parikh, Okabe, Jantzen, and Ofek. The rejection is traversed.

Claims 20, 29, and 36 depend from claim 18, 27, and 34, respectively. Without acquiescing in the rejection, Ofek does not cure the deficiencies in the disclosures of Ishibashi, Mazzurco, Parikh, Okabe, and Jantzen discussed above with respect to claim 18 and 27. Claims 20, 29, and 36 are, therefore, patentable over Ishibashi, Mazzurco, Parikh, Okabe, Jantzen, and Ofek, whether taken alone, or in any reasonable combination, for at least the reasons given above for claims 18, 27, and 34.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully requests the Examiner's reconsideration of the application and the timely allowance of the pending claims.

While the present application is now believed to be in condition for allowance, should the Examiner find some issue to remain unresolved, or should any new issues arise which could be eliminated through discussions with Applicant's representative, then the Examiner is invited to contact the undersigned by telephone in order that the further prosecution of this application can thereby be expedited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

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